

## **Growth Determinants of Smallholder Poultry Businesses in Tanzania: Incorporating transaction costs in the neoclassical growth model**

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### ***Abstract***

*This paper assesses relevance of incorporating transaction costs in the neoclassical growth theory in explaining factors determining growth of small farm businesses in peri urban areas of Tanzania. A cross-sectional survey was conducted in Dares salaam and Singida regions covering 170 respondents in the study. Linear regression analysis indicate that growth of PFBs is simultaneously determined by search and screening transaction cost, profit margin and level of technology; as all the three variables are statistically significant ( $P < 0.10$ ). The analysis showed also that profit margin has greatest influence on growth (Beta = 1.000059) followed by search transaction cost (Beta = -0.00037), and level of technology (Beta = 0.000208). Based on the econometric results, the findings support the theory to a great extent as a powerful tool for decision making. A theory based policy intervention to stimulate growth should therefore be focused on measures to enable firms to increase profit margin, minimize search and screening cost, and employ improved technology.*

*Key words: Poultry businesses, growth determinants, transaction cost, Tanzania*

## 1. Introduction

Tanzania has high potential for increased production of poultry in terms of land and labour (MLD 2008); but production of poultry is very low resulting to net supply deficit of poultry meat. This can be observed by the fact that Tanzania imports poultry meat to supplement domestic production; and the imports have been growing very fast during recent years. It has, for example increased from 27 tons in 2002 to over 600 tone in 2010 showing that that the country's production potential is highly underutilized. In terms of meat consumption, while the United Nations Food and Agriculture Organization (FAO) recommend a minimum per capita meat consumption of 50kgs, actual per capita meat consumption for Tanzanians is only 11kgs due to supply deficit. In regards to the rate of increase in production over years, meat production has been increasing at a slower pace than increase in population as while human population has been growing at a rate of 3.3 percent p.a.; meat production has been increasing at rate of only 2.4 percent (0.4 percent for poultry meat). Many scholars in this field view that, the low productivity results from poor health care, nutrition and housing; but they acknowledge lack of comprehensive studies to have been done in this area (Swai et al, 2007; Mlozi et al 2003). The scholars, conclude in principle that small businesses cannot successfully survive and grow in the current globalized market unless they agglomerate. They view also that, there is limited literature on agglomerations of firms and other forms of institutional arrangements as related to growth of the poultry industry.

### *1.1 Neoclassical approach to growth theory*

Theoretically, businesses produce in response to the consumers' needs and demand; in other words, consumers determines quantity and quality which producers produce. This is what is referred to, as consumer sovereignty where the consumer is viewed as a 'king' (Baulmo1988). In his book, '*An enquiry into the Nature and Causes of Wealth of Nations*', *Smith (1937)* insist that, the functioning of an economy is to be found in the final demand and needs for goods and services; and that consumption is the sole end and purpose of all production and the welfare of the producers. In practical terms the consumers dictates what to be produced in terms of quantity and quality because the producers take orders from the consumers. Using Godwin (2007) words, the main argument for consumer sovereignty is that, without need and demand, the supply side of the economy would expire; this is because the producers cannot keep on producing if no one buys the goods; and therefore the consumers as a source of need and demand are central to the mechanism that makes the firms to produce. In an economy where there is unmet demand, therefore, rational producers evolve and increase production to earn more profit. The background review indicate that, despite of the wide potential for production of poultry and high demand poultry meat, the poultry industry in Tanzania has not been growing in pace with increase in demand. This contradicts producer rationality, as under normal circumstances the entrepreneurs are expected to evolve and increase production in response to an increase in demand to earn more profit.

### *1.2 New institutional economics approach*

While neo classical economists attribute economic behavior of firms to profit-maximization motives applied in the process of supplying products to meet demand as the necessary element for firms evolution and growth; the new institutional economists, view that transaction cost minimization is the major factor in influencing enterprise growth and development (Stein, 1992; Nelson, 2003). New institutional economics literature indicate however that, the existence of transaction costs curtails producers to respond to demand as postulated in the market mechanism analysis by neo classical

economists. Williamson (1985) view that, consumer sovereignty as theorized in the general equilibrium under assumptions of frictionless market, may not apply in the real world due to existence of transaction costs, that is, costs of participating in the market. The transaction costs include search and information costs (such as those incurred in determining whether the required commodity is available in the market or not, which segment of the market offer highest price and at what time; and obtain information about reliability and trustworthiness of potential trading partners), bargaining costs (including costs required to come to an acceptable agreement with the other party to the transaction and drawing up an appropriate contract) and enforcement cost (cost incurred to ensure that the trading partners do not breach sale contracts/agreements).

The central argument of the new institutional economics is that there are costs in any economic exchange, regardless of whether it occurs in market institutional arrangement or otherwise. Basically in the new institutional economics nomenclature, institutional arrangement is an arrangement that is set by trading partners to make an economic exchange (Ngaruko, 2012). The arrangements are categorized into market (that is spot market), hierarchies (firms such as vertical integration and companies) and hybrids (such as joint ventures and contract farming). Transactions in the market are guided by price mechanism; while in firms they are guided by contracts among the partners. The hybrids are composed of both market and firms elements. This forms the basis for the transaction cost theory of the firm which states that, *'market and firms (hierarchies) are the two possible forms of institutional arrangements to coordinate transactions; and choice between the two depends on relative transaction cost. When transaction costs in the market is relatively greater than in firms, people begins to organize production in firms; and when the costs in the market continues to be greater than it is hierarchies, the firms grow; and vice versa (Coase 1937)'*. The theory predicts therefore, the mechanism by which firms evolves and grow. More specifically it shows that minimization of transaction costs, that is, removing inefficiency is the reason for existence and growth of firms. In Williamson (1981) words, market internalization provides the reasons for firms' evolution and growth notably by vertical integration, conglomeration and formation of transnational corporations. Formation of hydride forms of organisations such as strategic alliances, networks and joint ventures is also attributed to the quest for efficiency (Williamson, 1993), the source of growth.

### 1.3 Research objective and hypotheses

#### 1.3.1 Research objectives

The paper is designed to assess relevance of the transaction cost theory of the firm on explaining factors determining growth of small business firms in developing economies. The study is aimed at examining factors determining growth of small poultry firms predominant in Tanzania. The premises of this paper is that development of efficient institutional arrangements is vital for growth of the poultry industry; and therefore, if they do not evolve independently, then government interventions is necessary to stimulate their development for fueling growth of the poultry industry. This study intends, therefore to analyze, factors which can contribute to evolution and growth of the poultry industry using neo classical economics and new institutional economics schools of thought.

#### 1.3.2 Research Hypothesis

The general hypothesis of this research is that the neo classical economic theory of demand and supply cannot provide full explanation of factors determining growth of the poultry farm businesses because it assumes away transaction costs. More specifically, it is hypothesised that:

- (i) Growth of poultry farm businesses depends on attractiveness of profit margin
- (ii) Change in entrepreneurial culture has impact on growth.
- (iii) Improved technology is a stimulant to growth.
- (iv) Public intervention is a stimulant to growth.
- (v) Change in transaction cost has impact on growth.

## 2. Methodology

### 2.1 The study sample

The study used cross-sectional survey method which was conducted in in Dar es Salaam and Singida regions in the United Republic of Tanzania. The two regions were selected due to a number of reasons, including; (i) Dar es Salaam region is a potential market for poultry produces (in forms of hotels, bars, restaurants and many other consumers) and it is a potential producer of exotic poultry birds, (ii) Singida region, is one among the potential producers of traditional poultry birds in the country; and (iii) the two regions have agglomerations of poultry farm businesses. The analysis in the present study employed econometric method based on information gathered from a sample of 170 respondents. Out of the total respondents, 128 (75 percent) were individual business entities operating in market institutional arrangement referred to in this paper as institutional arrangement 1 (IA1); and 25 percent were contractual business arrangement (including partnerships, women groups and contract farming) referred to in this paper as institutional arrangement 2 (IA2).

### 2.2 Conceptual framework of the PFBs growth model

Figure 1 presents the conceptual framework describing the overall activities of the poultry industry and identify areas responsible for growth of the PFBs in Tanzania.

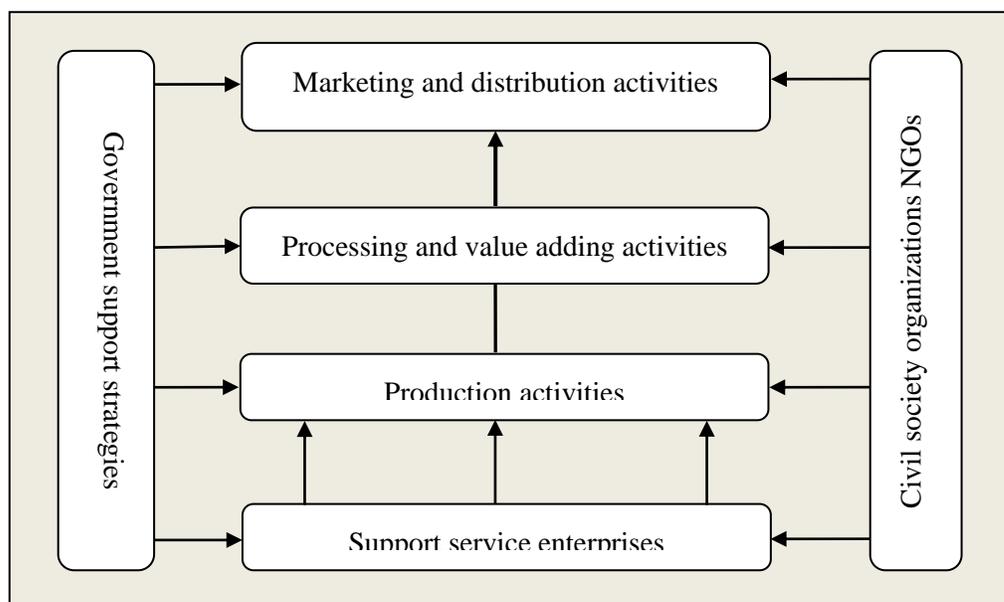


Figure 1: Poultry industrial supply chain in Tanzania

The conceptual framework in Fig. 1 is tracing activities through which the poultry products moves from producers to the consumers; that is, it breaks down the poultry industry into value adding activities – the industrial supply chain. At each level of the supply chain in the model, the PFBs are provided with public goods and services by the Government and other public institutions as depicted in figure 1. The components of the industrial supply chain include production activities, processing and value adding activities, marketing and distribution activities and public support strategies (Civil society organisations Non-governmental Organisations; and Government support strategies).

#### 2.2.1 Production activities

The poultry farmers are the main actors at this level of the industrial supply chain, where actual poultry keeping (extractive production) takes place. The activities involved in this stage includes: construction of poultry sheds, cleaning sheds and nursing the birds. The products at this level, that is live birds and poultry meat are sold to the retailers, wholesalers and processors; and some are allocated for own consumption. Some of important production and distribution inputs needed at this level of the supply chain includes: veterinary medicine and vaccine for health care of the birds, cold storage facilities for storage of poultry meat in cases where live birds cannot find buyers, and transport facilities for the harvests to the buyers. Due to perishable nature of poultry products the farmers needs also to have reliable alliances or contracts with the buyers who can promptly purchase the harvests. The farmers needs also personalize relationship or contracts with suppliers of production inputs including feed and veterinary medicines in order to avoid transaction risks of buying substandard inputs.

#### 2.2.2 Processing and value adding activities

The food processors are the actors at this level of the supply chain, where processing (manufacturing) of poultry products takes place. At this level of the supply chain raw materials produced in the extractive industry; including live birds and meat are transformed into higher valued products by use of machines or hands. The processed products including canned meat, frozen meat, dressed chicken and meat sausage are then sold to consumers, retailers and wholesalers. Some of the processed poultry meat may as well be sold in the export market. At this level of value chain, cold storage and transport facilities are needed for the firms to efficiently produce and distribute the processed poultry products. There is also a need for the processors to have good personal relationship or contracts with the buyers to buy the harvests within shorter period of time before the products decompose.

#### 4.2.3 Marketing and distribution activities

The wholesalers and retailers are the business actors at this level of the supply chain. They buy the farm harvests from the farmers and food processors in large quantities and resale to the retailers. The retailers on the other hand resale to the final consumers. Refrigerated vehicles and specialized facilities for transportation of live birds are also required for the poultry firms to efficiently perform business. There is also need for a chain of cold storage points in different places where PFBs from different places can preserved mainly in form of frozen poultry meat (at a token fee) while waiting for buyers. The cold facilities reduces to a great extent the transaction risks resulting from uncertainty of getting buyers or even being compelled to sell at relatively lower price in fear of loss of weight or death of the bird. The business firms can as well reduce the risk of loss due to perishable nature of the harvest by having reliable alliances or contractual arrangements with buyers to promptly buy the products.

#### 4.2.4 Government support strategies

The government is responsible for formulating support strategies and policies for growth and development of the poultry industry. It provides public and merit goods required for the PFBs to efficiently perform business in the supply chain. Some of important public goods and services needed by the farm businesses include: vaccination programmes for health care of the birds, extension services and educational programmes on business management. The Government is also required to avail well functioning legal institutions to protect the producers in business disputes. The government may sometimes organise provision of the public goods and services through Non-Governmental institutions or in partnership with these bodies. In Tanzania the strategies are formulated and implemented by the Ministry of Livestock Development. At international level the strategies and policies are formulated by the Food and Agricultural Organization (FAO).

#### 4.2.5 Civil Organizations and Non Governmental Organizations

These are participants in the supply chain which provides a wide range of public goods and services to the poultry farm community. The role of the NGOs and Civil Society include: to bring the businesses in access to financial resources and technical advice where the government cannot efficiently provide the services. It as well provides market information to the farm businesses in the supply chain. The NGOs and Civil Society can as well lobby for provision of subsidies by the Government, reduction of tax on inputs and so on to increase production and distribution ability of the business firms. They can also engage in dialogue with the Government and international institutions for technical assistance in a particular field for the PFBs. Support service enterprises are also the participants in the supply chain providing services including banking, veterinary and transportation services to the PFBs.

### 2.3 Modeling the determinants of growth of the PFBs

The study used linear regression method because of advantages that accrue to this technique; as (i) it tracks interrelationships among economic variables; (ii) it is free from subjective estimation of variables – it is not subjective; (iii) it is easy to apply and use; and (iv) it predicts not only the direction of change but also the magnitude of that change. The model in the current study is essentially consistent with Solow growth model (equation 1). The Solow model predicts factors contributing to economic growth based on neo classical economics assumptions. It focuses on three variables namely, labour (L), capital investment (K) and useful knowledge/effective labour (A). According to this model, progress of the three inputs in the PFB production function results into growth of output (Y) (David, 1996).

$$(Y) = f(K, L, A) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

The PFBs growth model in the current study (equation 1) presents technological relationship that exists between growth of PFBs (GWT) measured in terms of poultry meat produced and its independent variables. The independent variables in the causal relationship equation are: factors which stimulates entrepreneurs to undertake capital investment including profit margin (PGM), Government interventions on provision of public goods and services (GVT) and improved technology (TECH); availability of useful knowledge in form of entrepreneurial culture and skills of business actors in the value chain (KNW); and transaction costs namely search and screening cost (SRC), negotiation cost (NGT) and enforcement cost (ENF). The fact that manpower in Tanzania is



responses ranged from ‘highly believe (+2)’ to ‘don’t believe at all (-2)’; that is, 1 to 5 scale respectively. The respondents’ perceptions on the three traits are presented in table 1.

Table 1 Entrepreneurial culture

|                             | N   | Respondents’ perceptions |         |          |               |                      | Total score | Rank |
|-----------------------------|-----|--------------------------|---------|----------|---------------|----------------------|-------------|------|
|                             |     | Highly believe           | Believe | Not sure | Don’t believe | Don’t believe at all |             |      |
| <b>Skills and Knowledge</b> | 170 | 102                      | 57      | 05       | 02            | 04                   | 251         | 2    |
| <b>Risk of Loss</b>         | 169 | 92                       | 55      | 06       | 07            | 09                   | 214         | 3    |
| <b>Innovativeness</b>       | 169 | 123                      | 31      | 01       | 06            | 08                   | 255         | 1    |

To get descriptive statistics for entrepreneurial culture variable for use in the econometric model, total scores on respondents’ perceptions were summed and divided by number of total attributes for the variable. Descriptive information for the variable is depicted in table 4. The scores in table 1 indicate also that, low innovativeness of the business actors in PFBs was perceived as the number one obstacle for entrepreneurial success followed by low level of entrepreneurship skills and knowledge by business actors; and propensity to take risks ranked third as an obstacle in the list. The level of technology variable (TECH) was computed as a weighted score on a set of important attributes of employment of high technology in PFBs. The attributes included use of veterinary medicine and vaccine in production, use of cold storage facilities for warehousing the harvests; and use of refrigerated vehicles in marketing and distribution of the harvests. In order to obtain the information for the model, the respondents were asked to rate the extent by which they usually use each of the attributes. The responses ranged from ‘use it in most cases (+2)’ to ‘don’t use it at all (-2)’. The respondents’ perception on the extent by which improved technology in the PFBs is employed is depicted in table 2.

Table 2 Employment of improved technology

| Inputs                        | N   | Respondents’ perceptions |        |          |               |                      | Total scores | Rank |
|-------------------------------|-----|--------------------------|--------|----------|---------------|----------------------|--------------|------|
|                               |     | Use it in most cases     | Use it | Not Sure | Do not use it | Do not use it at all |              |      |
| <b>Medicine&amp; vaccines</b> | 169 | 110                      | 53     | 0        | 02            | 04                   | 263          | 1    |
| <b>Hatcheries</b>             | 169 | 10                       | 04     | 0        | 01            | 154                  | -283         | 4    |
| <b>Storage facilities</b>     | 169 | 08                       | 09     | 02       | 13            | 137                  | -262         | 2    |
| <b>Refrigerated Vehicles</b>  | 168 | 05                       | 06     | 02       | 12            | 143                  | -282         | 3    |

To obtain descriptive statistics for TECH variable for use in the econometric model, total scores on respondents’ perceptions were summed and divided by four (number of total attributes for the

variable). Descriptive statistics for the variable for use in econometrics model is depicted in table 4. The scores depicted in table 2 indicate also that, the PFBs employs improved technology in terms of use of medicine and vaccines in production as indicated by + 263 scores, but do not use high technology in storage and transportation as indicated by negative scores in the table. In comparison the table indicate that, the use of veterinary medicine and vaccines rank first followed by use of cold storage facilities, while refrigerated vehicles and hatcheries are rarely used. The public interventions variable (GVT), a proxy for Government and Non Governmental institutions involvement in stimulating production and growth of the PFBs was computed as weighted scores of a set of selected important characteristics of a well functioning public sector in the PFBs. The characteristics included provision of educational programmes and extension services, availing vaccination programmes against disease outbreaks, and provision market information by the public sector. To obtain this data the respondents were asked to provide information on the extent by which each of the public services is availed. The responses ranged from ‘highly provided (+2)’ to ‘not provided at all (-2)’. The respondent’s perceptions on this variable are summarized in table 3.

Table 3 Public interventions

| Inputs                    | N   | Respondents’ perceptions |          |          |              |                     | Total scores | Rank |
|---------------------------|-----|--------------------------|----------|----------|--------------|---------------------|--------------|------|
|                           |     | Highly provided          | Provided | Not Sure | Not provided | Not provided at all |              |      |
| <b>Market information</b> | 168 | 5                        | 56       | 43       | 17           | 48                  | -47          | 3    |
| <b>Ed. Programs</b>       | 169 | 29                       | 89       | 19       | 13           | 19                  | 96           | 1    |
| <b>Vaccinations</b>       | 169 | 51                       | 65       | 00       | 21           | 32                  | 82           | 2    |

In order to obtain descriptive statistics for GVT variable for use in the regression model, total scores on respondents’ perceptions were summed and divided by number of total attributes for the variable. Descriptive statistics for the variable is depicted in table 4. The scores in table 3 indicate further that, provision of educational programmes and extension services ranks first followed by vaccination, while provision of market information ranks third.

### 2.5 Model estimation

A backward regression analysis was employed to estimate equation (4) using ordinary least squares estimator. In econometrics, the backward regression analysis is a variable selection procedure where all the hypothesized variables are entered into an equation and the weak ones are sequentially removed. The variable with smallest partial correlation with the dependent variable is considered first for removal. After the first variable is removed, the variables remaining in the equation with the smallest partial correlation are considered next. The process stops when there are no variables in the equation that satisfy the removal criteria. Table 4 summarizes the definitions and descriptive statistics for variables used in the regression analysis, the inputs in the causal analysis of determinants of growth of PFBs.

Table 4 Descriptive statistics for determinants of growth of PFBs

| Variable                             | Definition                              | Descriptive statistics |            |               |               |
|--------------------------------------|---|------------------------|------------|---------------|---------------|
|                                      |   | N                      | Minimum    | Maximum       | Mean          |
| <b>Growth (GWT)</b>                  | Poultry meat produced                   | 170                    | 40.0       | 4600.0        | 7025.00       |
| <b>Profit margin</b>                 | Profit = Total revenue<br>- total costs | 170                    | 100,000.00 | 10,000,000.00 | 20,000,000.00 |
| <b>Government.<br/>Interventions</b> | Public interventions *                  | 169                    | 3.00       | 14.00         | 7.9112        |
| <b>Technology</b>                    | Improved technology*                    | 168                    | 3.00       | 14.00         | 13.0119       |
| <b>Entrepreneurial<br/>Culture</b>   | Useful knowledge*                       | 169                    | 3.00       | 15.00         | 4.7692        |
| <b>Search Cost</b>                   | Search cost (TShs)                      | 170                    | 1500.00    | 104,000.00    | 24,322.00     |
| <b>Negotiation<br/>Cost</b>          | Negotiation Cost<br>(TShs)              | 170                    | 750.00     | 97,500.00     | 20,309.00     |
| <b>Enforcement<br/>cost</b>          | Value of enforcement.<br>Cost           | 169                    | 1000       | 14,200.00     | 7.581.10      |

\* Likert scale score (see section 2.3)

Prior to interpretation and use of the regression output in the analysis, correlation analysis was done to detect presence of multicollinearity. This is because presence of multicollinearity decreases the precision of the OLS estimates making it important to carry out the test. Different authors offer different guidelines for interpreting correlation matrix coefficients. The current study adopted interpretation rule suggested by Cohen (1988); and quoted also by Ngaruko (2007). In this guideline, correlation between -0.29 to -0.10 and 0.10 to 0.29 is considered to be small; while correlation between -0.49 to -0.30 and 0.30 to 0.49 is considered to be medium; and between -1.00 to -0.5 and 0.50 to 1.00 is considered to be large. The correlation coefficient matrix for the test (appendix 1) show that there was no threat of multicollinearity problem in the model as there was no pair of variables that had significantly large Pearson coefficient discovered to justify presence of serious collinearity problem.

### 3. Findings and discussions

#### 3.1 Parsimonious PFBs growth model

Table 5 summarizes the results of the backward regression estimation. It shows that in model 1 all the seven independent variables hypothesized to determine growth (equation 2) were included in the analysis but only three explanatory variables were retained in the last regression step. The regression result shows that Model 5 in the list is the parsimonious PFBs growth model because it has all the variable parameters statistically significant. More specifically the levels of significance are P = 0.05 for profit margin, P = 0.05 for search cost and P = 10 percent for technology. This indicates that, out of all the predicted variables, only profit margin, technology and search cost are the reliable variables

for the growth function. Interpretation for policy and theoretical implications were therefore based on the three variables only.

Table 5 Estimated PFBs growth model

| Model            | Independent Variables   | Unstandardized Coefficients |            | Standardized Coefficients | T        | Sig.     |
|------------------|-------------------------|-----------------------------|------------|---------------------------|----------|----------|
|                  |                         | B                           | Std. Error | Beta                      |          |          |
| 1                | (Constant)              | -0.77566                    | 1.343404   |                           | -0.57738 | 0.564492 |
|                  | Profit                  | 0.000395                    | 5.12E-08   | 1.000055                  | 7704.659 | 0        |
|                  | Public interventions    | -0.00826                    | 0.054083   | -2E-05                    | -0.15264 | 0.878873 |
|                  | Technology              | 0.116637                    | 0.076859   | 0.0002                    | 1.517544 | 0.131103 |
|                  | Entrepreneurial culture | -0.01125                    | 0.07304    | -2.1E-05                  | -0.15407 | 0.877749 |
|                  | Search Cost             | -2.2E-05                    | 7.47E-06   | -0.00037                  | -2.88873 | 0.004404 |
|                  | Negotiation Cost        | 2.04E-06                    | 1.05E-05   | 2.61E-05                  | 0.193861 | 0.84653  |
|                  | Enforcement cost        | -3.8E-06                    | 9.22E-06   | -5.4E-05                  | -0.40969 | 0.682583 |
| 2                | (Constant)              | -0.85302                    | 1.240363   |                           | -0.68772 | 0.492622 |
|                  | Profit                  | 0.000395                    | 5.01E-08   | 1.000059                  | 7885.053 | 0        |
|                  | Technology              | 0.117195                    | 0.076539   | 0.000201                  | 1.531183 | 0.127687 |
|                  | Entrepreneurial culture | -0.01308                    | 0.071834   | -2.4E-05                  | -0.1821  | 0.855734 |
|                  | Search Cost             | -2.1E-05                    | 7.37E-06   | -0.00037                  | -2.90751 | 0.004158 |
|                  | Negotiation Cost        | 2.23E-06                    | 1.04E-05   | 2.87E-05                  | 0.214902 | 0.830116 |
|                  | Enforcement cost        | -3.6E-06                    | 9.16E-06   | -5.2E-05                  | -0.39864 | 0.690687 |
|                  | 3                       | (Constant)                  | -0.97252   | 1.049384                  |          | -0.92676 |
| Profit           |                         | 0.000395                    | 4.94E-08   | 1.000063                  | 7994.124 | 0        |
| Technology       |                         | 0.12056                     | 0.074054   | 0.000206                  | 1.628002 | 0.105468 |
| Search cost      |                         | -2.1E-05                    | 7.18E-06   | -0.00037                  | -2.94522 | 0.003703 |
| Negotiation cost |                         | 2.43E-06                    | 1.03E-05   | 3.12E-05                  | 0.236313 | 0.813488 |
| Enforcement cost |                         | -3.7E-06                    | 9.12E-06   | -5.3E-05                  | -0.40698 | 0.684562 |
| 4                |                         | (Constant)                  | -0.90088   | 1.001717                  |          | -0.89933 |
|                  | Profit                  | 0.000395                    | 4.92E-08   | 1.000062                  | 8020.977 | 0        |
|                  | Technology              | 0.118209                    | 0.07317    | 0.000202                  | 1.615544 | 0.108127 |
|                  | Search Cost             | -2.1E-05                    | 7.11E-06   | -0.00036                  | -2.94546 | 0.003697 |
|                  | Enforcement cost        | -3E-06                      | 8.64E-06   | -4.4E-05                  | -0.35159 | 0.725598 |
| 5                | (Constant)              | -0.96254                    | 0.983606   |                           | -0.97858 | 0.329229 |
|                  | Profit                  | 0.000395                    | 4.9E-08    | 1.000059                  | 8053.334 | 0        |
|                  | Technology              | 0.121556                    | 0.072354   | 0.000208                  | 1.680028 | 0.094856 |
|                  | Search Cost             | -2.1E-05                    | 7.09E-06   | -0.00037                  | -2.97162 | 0.003408 |

The unstandardized coefficients present effects of independent variables to the dependent variable in terms of natural units of the variables. It can for example, be used to show a quantitative relationship of exactly how much improvement in technology can increase how much output (GWT). The standardized regression coefficients on the other side present relative strengths of different independent variables to the dependent variable in an equation. It is for example, show in the present study, the relative strength of impact of technology (TECH) to changes on the dependent variable (GWT) as compared to other variables in the growth equation. In this study, as it is with most social science researches, the econometric output is reported based on the standardized beta coefficients.

Researchers in natural science studies often report their findings using unstandardized coefficients, because they are interested in the particular scale values.

The econometric results summarized in table 5, show that there is a positive and significant relationship between profit margin (PMG) and growth (GWT). The relationship implies that increase profit margin stimulates the farm businesses to increase production. The finding is consistent with the neo classical economics theory of the firm prediction that, producers aims at maximizing profit and therefore increases production (that is, grows) in response to increase in profit. It is also consistent with the concept of consumer sovereignty, that the producers increase production in in response to demand in order to earn more profit. Empirical studies show however that the PFBs in the country have not been able to appropriate all the profit margin because a greater part of it is in most cases taken by middlemen. While Mlozi (2003) show that 65 percent of profit margin is appropriated by middlemen, Kitalya (2004) show that 40 percent of profit goes to the middlemen.

The econometric output shows also that, there is a positive and significant relationship between increase in production/growth (GWT) and improvement of technology. The positive relationship implies that improvement in technology stimulates growth. Basically, the use of advanced technology (TECH), indicated by high degree of use of high-tech inputs including: veterinary medicines and vaccines, hatcheries, cold storage facilities and refrigerated transport vehicles results into higher efficiency and thereby stimulates growth. Table 2 shows that the PFBs in the study area do not adequately employ improved technology. For example out of 168 participants who were asked to rank the extent by which they uses refrigerated vehicles in transportation of poultry products 143 (85 percent) indicated that they don't use it. This implies that almost all the poultry harvests are transported in lorries and other means of transport not suitable for perishable commodities. The inability to own and use cold storage facilities and specialized facilities to transport live birds is a great hindrance to growth of the PFBs because it is risky to transport or keep on waiting for buyers at the market.

The regression result shows in addition that, there is a negative and statistically significant relationship between search and screening cost (SEARCHTOTAL) and growth (GWT). The relationship implies that, increase in the transaction cost discourages business actors to increase investments in PFBs and therefore inhibits growth. The finding is consistent with the transaction cost theory of the firm, that firms continues to produce within the firm (in contractual business entity arrangement) and grows only if costs of producing within the firm continue to be cheaper than coordinating transaction in the market. Most of the informants in the study area indicated that it difficult to get customers for the birds in both Singida and Dar es Salaam markets.

### *3.2 Discussion*

The chapter show that out of the seven factors which were hypothesized to determine growth of PFBs, only three were the reliable determinants. These include; profit margin, technology and search cost. In regards to profit, the paper shows however that, the farmers are unable to appropriate more than 40 percent of the profit margin. The businesses get about 60 percent of the profit as the rest goes to the middlemen in the supply chain. This is sighted as one of the factors which discourage the farm businesses to increase production and grow. On the case of technology, the paper shows that PFBs are unable to employ advanced technology in marketing and distribution of the harvest. They are in

particular unable to process harvests and use cold facilities in storage and transportation of the harvests. This again is one of the hindering factors for the producers to increase production and grow because they cannot easily reach the buyers. The PFBs are also unable to increase production and grow because of high search cost. On the theoretical side, the paper supports both the neoclassical economics and new institutional economics predictions. The findings show that business firms increases production in response to increase in profit as predicted by the theory of the firm in neo classical economics. It shows also that business firms opts for market institutional arrangement; that is, become downsized in response to increase in transaction (search and screening in this case) as predicted by the transaction cost theory of the firm in the new institutional economics. The findings are therefore consistent with the definition of new institutional economics - that new institutional economics is an extension of the neo classical economics theory. In addition, while the transaction cost of the firm predicts that, the source of evolution and growth of business firms is minimization of transaction costs; the current study demonstrates that, growth of PFBs is the function of transaction cost minimization, use of improved technology and existence of attractive profit margin. This shows therefore that, the theory is not exhaustive enough to provide a full explanation of the factors determining growth of PFBs. Theoretical implication in this discussion is therefore that, for the transaction cost theory of the firm to be exhaustive it must also take into account profit margin (both monetary and non monetary profit) and technology factors. It must include in addition transaction benefits that accrue to the firm in the model.

#### 4. Policy implication

The findings from this study imply that there should be policy changes to to successfully encourage the small businesses to form contractual business arrangement, which is the source of growth and development. This is due to the fact that contractual businesses enable the business firms to employ improved technology minimize transaction mark ups and eliminate middlemen who appropriates greater part of profit margin. The government must therefore avail a well functioning institutional environment. Empirical review by the World Bank (2011) show that, doing business in Tanzania is very hard. It is for example; easier to do business in Rwanda, Kenya and even in Ethiopia than it is Tanzania. Almost all the World Bank indicators of institutional environment show that the institutional environment is too weak to encourage the farm businesses to increase production and grow. Table 7 shows some of the indicators of institutional environment worldwide. This implies therefore that, in order to successfully stimulate growth of the PFBs the government must avail a well functioning institutional environment which can minimize transaction costs.

**Table 7:** Indicators for doing business (rank out of 183 countries)

|   | <b>Tanzania</b> | <b>Rwanda</b> | <b>Kenya</b> | <b>Ethiopia</b> |
|---|-----------------|---------------|--------------|-----------------|
| <b>Ease of doing business</b>             | <b>127</b>      | 45            | 109          | 111             |
| <b>Starting business</b>                  | <b>123</b>      | 8             | 132          | 99              |
| <b>Dealing with business registration</b> | <b>158</b>      | 61            | 133          | 113             |
| <b>Getting credit</b>                     | <b>98</b>       | 8             | 8            | 150             |
| <b>Enforcing contract</b>                 | <b>36</b>       | 39            | 127          | 57              |
| <b>Protecting investors</b>               | <b>97</b>       | 29            | 97           | 122             |

**Source:** World Bank 2011

The study shows also that, there is a need for enhancing institutional innovations; that is backing and amplifying activities initiated by the society to minimize transaction risks. There are some few examples of institutional innovations in the sample area, which need to be enhanced by state institutions. Contract farming programmes is one of the innovations established by the private sector in some areas of the country to minimize transaction risks by providing necessary support system to the smallholder farmers. The programmes avails basic poultry services including: veterinary drugs, feed, poultry equipment, and extension and business development services on contractual arrangements. The innovation is focused also, on imparting relevant skills, stimulating business endeavors and developing linkages in order to promote the use of new knowledge and improved technology. There is therefore a need for Government backing particularly on contract enforcement by both the contractor and contract farmers; and facilitate the contracting company to increase geographical coverage in the country. Traditional breeding system to upgrade genetic quality of birds in terms of increase in size (and weight) and resistance to diseases is another innovation undertaken by farmers in the study area to reduce transaction costs. In this system a male bird is borrowed for one or two months for crossbreeding to upgrade quality of a client farmer's birds. This is a social loan without any guarantee where the sharer expects a return of a female bird or a pair of poultry birds. The traditional breeding informal contractual arrangements are not well understood by policy makers though they can play a significant role in stimulating growth of traditional poultry farming. It is important therefore for the government to recognize the innovation and amplify it to meet demand of organic poultry meat.

## 5. Conclusion

The findings of this study show in addition that, despite the fact that new institutional economics is universally accepted as an extension of main stream economics to explain the function of the economy in the real world, the subject is still not yet popular and rarely used in decision making. It is important therefore to popularize it in academics and policy making. One of the methods to popularize the subject is by mainstreaming or introducing New Institutional Economics as a subject in the university (and non university institutions of higher learning) curricular. It may as well be taught as part of microeconomics course to business students in the institutions of higher learning in the country. This is because, conventional economics taught in the present curricular places emphasis on neoclassical economic theories only. It does not provide the students with an understanding of how real economies work; which in Coase's (2011) words, it bears very little relation to what actually happens in reality.

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## Appendix 1

Correlation (Pearson) matrix for variables in the PFBs growth model

|                          | Profit    | Public Intervention | Technology | Entrepreneurial culture | Search Cost | Negotiation Cost | Enforcement Cost |
|--------------------------|-----------|---------------------|------------|-------------------------|-------------|------------------|------------------|
| Profit                   | 1         | -0.247 **           | -0.149     | -0.007                  | 0.118       | 0.015            | 0.064            |
| Public Intervention.     | -0.247 ** | 1                   | -0.027     | 0.192 *                 | -0.228 **   | -0.174 *         | -0.139           |
| Technology               | -0.149    | -0.027              | 1          | -0.215 **               | 0.040       | -0.163 *         | -0.137           |
| Entrepreneurial culture. | -0.007    | 0.192 *             | -0.215 **  | 1                       | -0.187 *    | -0.089           | 0.008            |
| Search Cost              | 0.118     | -0.228 **           | 0.040      | -0.187 *                | 1           | 0.109            | 0.040            |
| Negotiation Cost         | 0.015     | -0.174 *            | -0.163 *   | -0.089                  | 0.109       | 1                | 0.331            |
| Enforcement Cost         | 0.064     | -0.139              | -0.137     | 0.008                   | 0.040       | 0.331            | 1                |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).